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CARNEGIE MAGAZINE

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VOLUME XV PITTSBURGH, PA., JANUARY 1942 NUMBER 8

OPOSSUMS RAIDING A BIRD'S NEST

A NEW HABITAT GROUP IN THE CARNEGIE MUSEUM

This new exhibition case is one of a series created for the purpose of portraying for the children of Pittsburgh glimpses of the lives of animals native to western Pennsylvania; and takes its place in the Children's Museum with similar exhibits of family groups, including the common black duck, the ruffed grouse, the great-horned owl, the woodchuck, the skunk, the cottontail rabbit, and the muskrat.

(*See Page 244*)

THE CARNEGIE MAGAZINE

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OFFICE OF THE PRESIDENT OF
THE CARNEGIE INSTITUTE

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VOLUME XV — NUMBER 8

JANUARY 1942

O, speak again, bright angel! for thou art
As glorious to this night, being o'er my head,
As is a winged messenger of heaven
Unto the white-upturned wondering eyes
Of mortals that fall back to gaze on him
When he bestrides the lazy-pacing clouds
And sails upon the bosom of the air.

—ROMEO AND JULIET

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The Carnegie Institute, in the broadest sense, holds its possessions in trust for mankind and for the constant welfare and happiness of the race. Anyone, therefore, who by a gift of beautiful works of art, or objects of scientific value, or a donation to its financial resources, aids in the growth of these collections and the extension of its service is contributing substantially to the glorious mission of the Institute.

The Carnegie Institute will be the final home of every worthy collection of pictures and museum objects when the men and women who have chosen them wish to have the world enjoy them.

—ANDREW CARNEGIE

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"THEY ARE GENTLEMEN"

PITTSBURGH, PENNSYLVANIA

DEAR CARNEGIE:

At the Memorial Hall mass meeting, protesting the murder of hostages by the Nazis, about a month ago, I read your message, and later on I used the thought which I found in an article in the CARNEGIE MAGAZINE and which I have credited to your account, about the Italian General Graziani telling the poor villagers of Libya not to be fearful of the British because "they were gentlemen." . . . That message, like a few sentences out of Churchill's speeches, is a real human light in a terribly black and inhuman world situation, and I want you to know that we are all grateful to you for having recorded it.

And while I am writing, I want you to know that Mrs. Tabor and I always enjoy every page of the Magazine. The current issue containing an editorial on the world situation is excellent.

—EDWARD O. TABOR

POLAND CANNOT DIE

PITTSBURGH, PENNSYLVANIA

DEAR CARNEGIE:

I wish to thank you sincerely for sending me the CARNEGIE MAGAZINE. Through this medium, I am able to gain a clear picture of the life and thoughts of this great country. I have read each number with great interest and have enjoyed many of the columns, "Through the Editor's Window."

Last Sunday afternoon I sat in the Music Hall and listened with delight to the carols of all the nations. I was so impressed by the program which typifies the American ideal that yesterday I wrote a few words to Mrs. Samuel Ely Eliot, in appreciation of her efforts. I was moved by the fact that the group which sang Polish Christmas carols was placed in the center of the stage. It made me feel that Poland's martyrdom is being appreciated. Dorothy Thompson expressed it beautifully in these words: "Poland crucified herself that the world might live."

—HELIODOR SZTARK
[Consul General of Poland]

LOVE OF COUNTRY

Breathes there the man with soul so dead
Who never to himself hath said:
"This is my own, my native land"?
Whose heart hath ne'er within him burned
As home his footsteps he hath turned,
From wandering on a foreign strand?
If such there breathe, go mark him well;
For him no minstrel raptures swell;
High though his titles, proud his name,
Boundless his wealth as wish can claim
Despite those titles, power and pelf,
The wretch concentred all in self,
Living, shall forfeit fair renown,
And, doubly dying, shall go down
To the vile dust from whence he sprung,
Unwept, unhonored, and unsung.

—SIR WALTER SCOTT
[From "The Lay of the Last Minstrel"]

BUTTERFLIES AND MOTHS

The Rich Collection at the Carnegie Museum

By Walter R. Sweadner

Assistant Curator of Entomology, Carnegie Museum

A recent survey of the insect collections of the Carnegie Museum has revealed that there is now in the possession of the department of entomology nearly five thousand drawers of butterflies and moths gathered from the four corners of the earth and from most of the way stations in between. If one were to place a pin in each locality on the map from which we have one or more specimens, there would be few blank spaces—just the oceans, the deserts, and northern Asia. And, for some reason or other, we have practically nothing from Russia. The butterflies vary in size from the giant Ornithopteras, or bird-wing butterflies, of New Guiana, which are about half the size of this page, down to the tiny iridescent "blue" from the Mohave desert of California, two of which could hide, with their wings fully spread, under a dime. The moths have an even greater range in size. The largest is the hercules moth of Java, a relative of our Cecropia. This giant could not hide under this Carnegie Magazine unless the covers were opened up. Seven of them fill a museum drawer, and we can crowd that many in only by overlapping their wings. The smallest are relatives of the clothes moth, which spends its caterpillar stage living between the top and bottom surfaces of a leaf. When it emerges from the leaf and spreads its wings, it measures a little over an eighth of an inch from tip to tip. One drawer in the Marloff collection contains 688 of these midgets. The average number of specimens in a drawer for the entire Museum collection is about two hundred; we may estimate, then, that the section of entomology houses nearly a million butterflies and moths, to say nothing of beetles, flies, and wasps.

Naturally, such a collection must be kept in some sort of order, equivalent to a filing system in business. Back in the eighteenth century, Linnaeus, a Swedish scientist, laid the foundation for a system of classification of plants and animals, by which the relationships between living things may be better understood. This system has been expanded until now each kind of animal has its particular niche. For insects, the system is known as a catalogue, or check list, in which the butterflies and moths, for instance, are grouped into families and smaller divisions. We are working on the enormous task of arranging all our specimens according to this list. This project had been started for some of the individual collections, but now we shall combine everything into one large collection. Hence the survey mentioned in the beginning of this article.

Many interesting things were discovered in the survey, not the least of which was the way in which a collection grows. Biological collections, such as one of butterflies, find their chief scientific use in the study of distribution, relationships, and evolution. For these purposes, large numbers of specimens are necessary—large numbers from a few selected places, and fewer numbers from as many different places as possible. When you consider that in the United States alone there are nearly ten thousand different kinds of moths and

butterflies, it becomes obvious that one man, or even a museum staff, cannot collect all the kinds from all the places. Hundreds of men have contributed to the Carnegie Museum's collection of butterflies and moths. Some of the specimens were captured more than a hundred years ago. Perhaps the oldest among these is a hawk moth, Sphinx ligustri, from the collection of Guenee, which bears the label—translated—"raised from a caterpillar at Chateaudun 1834." Some represent years of toil by the professional collectors who comb the mountains and jungles, while others have been brought in by curious citizens who want to know, "What is this bug that has been eating my flowers?"

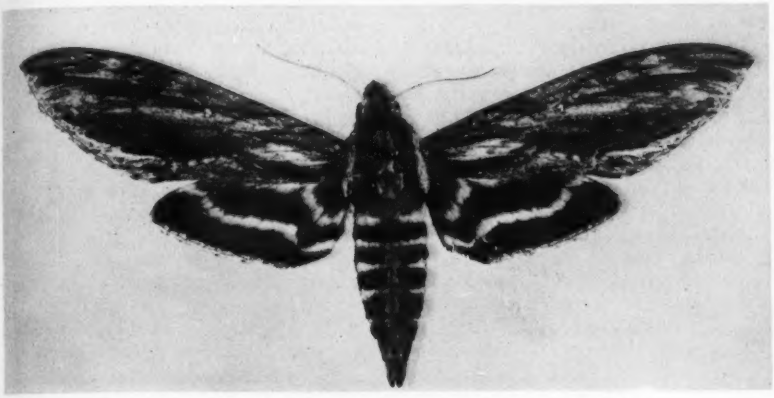
Let us look into the history of one of the specimens in the Museum collection. Back in the gold-rush days of California, a man by the name of Lorquin sent many kinds of butterflies and moths to two French biologists, Achille Guenee and Jean A. Boisduval. Other collectors sent them specimens from the eastern states, from South America, and from other parts of the world. One of these specimens was the hawk moth shown in the illustration. It was caught in Mexico about the time of our Civil War. It was new to Boisduval, so he gave it the name, Sphinx merops, and published a description of it. Later on he decided that Mr. Walker, of the British Museum of Natural History, had named the species before; Boisduval then retracted his description.

Eventually, after the deaths of Guenee and Boisduval, their collections, gathered throughout their lifetimes, passed into the hands of another distinguished French naturalist, Charles Oberthür, who had the advantage of large means that enabled him to devote himself to the study of science. His favorite preoccupation was to publish over two hundred and ten volumes of monographs of butterflies and moths, with superb illustrations in color. Oberthür purchased many collections, including those of A. Kuwart, Mabille, and Herman Joaquin. In addition, he had men catching butterflies and moths for him all over the world, thus accumulating an enormous collection. When Oberthür died, his friend, B. Preston Clark, of Boston, bought all his hawk moths.

Mr. Clark continued the collecting of hawk moths, adding, among others, the specimens of Adolph Mell, who had spent many years studying the life histories of the hawk moths of China. When Mr. Clark's material became too bulky to handle he deposited most of it in the Carnegie Museum, and upon his death in 1939 the whole priceless collection became the property of the Museum. At that time it constituted by far the most complete collection of this group in the world. So the moth that hovered over the flowers in Mexico more than seventy-five years ago is now impaled on a pin in the upper deck of the entomology laboratory of the Carnegie Museum.

In 1903 Rothschild and Jordan, of England, made a revision of the hawk moths, decided that Boisduval was right in his first judgment, and made a special note about this insect in their book, elevating it from just another specimen to the status of a "type," the standard by which all other moths of the same species are judged.

The Carnegie Museum has several thousand such types, many of them described by William J. Holland, whose collection fills numerous cabinets. Although Dr. Holland had specimens from all over the world, the bulk of his material, unlike Clark's and Oberthür's, came from a few selected places. He knew many missionaries and engaged them to collect for him. Thus he received the first specimens of many African species caught by the Reverend A. I. Good, the Reverend Mr. Carter, the Reverend J. A. Reis Jr., Mrs. M. L. Reutlinger, Dr. H. L. Weber, and others. The Museum also bought specimens from these people, building up an African collection, mostly from the Cameroons, totaling almost a thou-



A MEXICAN HAWK MOTH CAUGHT SEVENTY-FIVE YEARS AGO

sand drawers. Another locality that is well represented in the Holland collection is Alaska, where ministers named Young, Kusche, and Baxter caught many specimens for him.

Dr. Holland's visit to Japan inspired an interest in the lepidoptera of the Orient, so he added a fine Japanese collection and bought thousands of Indian, East Indian, and Australian specimens from such famous collectors as Fruhstorfer, Staudinger, and Gibbs. Many of our prized ornithopteras came from these sources. He engaged the services of H. H. Smith, one of the finest collectors of his day, and was the first to receive specimens from Doherty—who subsequently collected for Lord Rothschild—from Siam, the Himalayas, and the Malay Archipelago. Then Dr. Holland was able to secure, also, the collection of William Henry Edwards, the American authority on butterflies, to whom many of the specimens taken during the early exploring trips to the West had been sent for identification. Edwards' types are now in the Carnegie Museum, as is another important collection of early United States specimens—that of Theodore L. Mead. The great collection of Dr. Holland became the property of the Museum by his bequest.

Probably the most complete collection for any restricted territory is that for the Pittsburgh region. This collection is the work of many men. Dr. Holland and Dr. Kahl, Henry Klages, Bernard Krautwurm, and others of the Museum staff spent years gathering local material. In addition, many local collectors, whose names are too numerous to mention, donated rare specimens. Several large local collections, such as those of Henry Engel, Bernard Krautwurm, and Fred Marloff have come to the Museum through purchase or bequest.

The collection of Mr. Marloff, the purchase of which is one of the many personal contributions made to the section of entomology by George H. Clapp, Chairman of the Museum Committee of the Carnegie Institute, is remarkable for the numbers of microlepidoptera, some of them almost too small to be seen. The large collection of Ehrmann was given to the Museum.

Another "spot" collection—taken from one locality—is that from Jamaica, gathered by Andrey Avinoff, the Director of the Carnegie Museum, and his nephew, Nicholas Shoumatoff. Not only have they caught, or definitely determined to be extinct, almost every butterfly and moth recorded from this island, but they have added to the list many hundreds of new species never be-

fore recorded, and many that are even new to science.

Other collections in the Museum include a highly representative one from India, assembled by Dr. Kayvette; one of the most complete collections of hybrids known, from Hans Bytinski-Salz, containing many historic specimens; and the great South American series from such men as the scientist, William Schaus, and the professional collectors, Samuel Klages and Josè Steinbach, who also collected for Lord Rothschild. An important collection, limited to a small group of butterflies, is Lindsay's skipper collection. The skipper butterflies are a difficult group to identify, a fact that makes the large number of types in this collection doubly valuable. M. A. Carricker, an ornithologist, has supplied us also with many South American butterflies.

The men mentioned above have been contributors of large numbers of specimens to the collection. There have been hundreds of others. There has been hardly an expedition or collecting trip made by other departments of the Museum that has not contributed insects, sometimes by the hundreds. Even collectors in other fields who were not staff members have helped. George Sutton, the ornithologist and artist, brought us many rare and valuable specimens from the Hudson's Bay region; and it seems that few biologists can resist catching a butterfly.

The material still rolls in. At present we are preparing a large and quite complete collection from Manchukuo, purchased from M. Weymarn. Many butterflies and moths arrived recently from Indo-China for identification. Excellent series from Pohl and Plaumann of Brazil, Hoffman of Mexico, Weytkowski of Peru, and Walsh of Java, await labeling and incorporation into the collection. A list of those who have collected for the Museum in the past few years reads like a roster of the foreign legion. Just a few of them follow: E. Ducasse, Haiti; Miguel L. Jaume, Cuba; W. W. Worthington, Bahamas; Micaela A. Diaz, Argentina; Hans Bytinski-Salz, Europe; Shabana Shagoo, India; Pinkus, Trinidad; M. Oshima, Formosa; Haslam, Philippines; Abd-el-Talhook, Syria; and W. Stuber, Dutch New Guiana.

While the identity of all these individual collections will be lost in the combined collection, each specimen bears a label giving the name of the person who contributed it, or an accession number leading to that name. The collections lose some of their historical—or we might say antiquarian—value in the merging, but gain considerably in usefulness. Some museums keep each collection intact as a unit. To them the work of the man is more important than the convenience of study. In a large institution of this type, it is virtually impossible to gather all the specimens of one species together. As we plan it, not only can the species be inspected but also its nearest relatives, which are arranged in the same drawer or in a number of consecutive drawers. Thus the visiting scientist who has only a limited number of hours or days to spend on his study here can get the greatest possible benefit from the collection of the Carnegie Museum.

CARNEGIE MUSEUM

FREE LECTURES ON NATURAL HISTORY

[*Illustrated*]

SUNDAY 2:15 P.M.—LECTURE HALL

FEBRUARY

1—"Wild Birds at Home," by H. H. Harrison.

8—"Insect Collecting in the Everglades," by Walter R. Sweadner, Assistant Curator, Section of Entomology.

15—"Game Trails in British Columbia," by Lawrence C. Woods Jr.

22—"The Construction of Botanical Museum Groups," by Ottmar F. von Fuehrer, Staff Artist and Preparator.

After Mr. von Fuehrer's lecture, the audience will be invited to view the new Botany Hall and ask questions concerning the construction of the groups.

A CORRECTION

The picture of the tiger published on page 202 of the CARNEGIE MAGAZINE for December 1941 as "A Bengal Tiger" should have been labeled "A Siberian Tiger in the Carnegie Museum."

LEON KROLL EXHIBITION

Drawings and Scale Model for Worcester War Memorial Mural Decorations

COLOR SKETCH FOR CENTRAL PANEL

As part of a memorial to the men and women who died in the World War, 1917-18, the city of Worcester, Massachusetts, decided to decorate the entrance foyer of the Municipal Memorial Auditorium. The commission for the decorations was awarded to Leon Kroll, and he began his preliminary work in 1939. The murals were completed in May 1941.

Leon Kroll spent a year on the composition of the decorations, and during that time he made some two hundred drawings and color studies and a complete color sketch of the mural paintings in the scale of one inch to the foot. Through the courtesy of the artist, the scale model and many of the drawings are now being shown at the Carnegie Institute. The exhibition opened on January 8 and will continue through February 8.

There are two side panels in the model: the one, "Defense on Land and in the Air"; and the other, "Defense on the Sea." They are architectonically designed as the buttresses for the central panel, and, in the words of the artist, are "intended to be more active and violent in the emotion evoked." They provide the reason for the great central panel, under which is carved the inscription, "They ventured far in the cause of liberty." The central decoration in the original is fifty-seven by thirty feet.

The artist has described his theme as follows: "As to the story depicted in the large panel, the idea was to honor the memory of the soldiers who died in defense of our country. I used the theme of resurrection, which is eternal, not only from the religious angle, but also because it means rebirth and in a measure the renewal of a pledge. People of all classes and races who compose the modern American city gather in peace and harmony under our flag and all that it implies. The gesture of the soldier seen rising from the tomb symbolizes the spirit of sacrifice in defense of our way of life. Having given his

utmost, he confides the flag into the keeping of the young manhood and womanhood of the country."

It is interesting to note that practically all the figures in the great central panel were painted from studies made of men and women living in the city of Worcester. The landscape was also influenced by that city and its environs. Pittsburghers will note with pride that the general theme and figures of the painting, "Morning on the Cape," owned by the Carnegie Institute, appear in the upper left section of the decoration. The artist planned this panel on a grand scale and carried out his idea with easy simplicity and largeness of vision. The decoration is well organized, it is not cluttered with too many figures, it is rich in color; and the life in it, animate and inanimate, even with the memorial theme, is full and abundant, with the whole idea developed in a grand tradition.

The drawings for single figures and groups make up most of the exhibition. There are sixty-four of these. It is interesting to compare the drawings with the completed figures in the panels to see how useful the original sketches were and the faithfulness with which the artist carried them into his decorations. Each drawing is in itself a complete element of art and is done with that great technical skill, apparent ease, precision, and probity of line that characterizes Leon Kroll's work.

The exhibition is an instructive one in that it reveals one artist's approach to the problem of the mural decoration. It shows the stages in the development of the general scheme, the many drawings that had to be made after the theme had been outlined, and the fidelity in carrying out the conception in the completed mural decorations.

J. O'C. Jr.

STUDY, DRAPED FIGURE OF EDUCATION
Owned by Worcester Art Museum

THE WURTS CHRISTMAS DINNER

The name of Alexander J. Wurts, for many years a member of the faculty of the Carnegie Institute of Technology, is still a shining light to the students of Tech fifteen years after his death. For, in a generous bequest, Mr. Wurts left a Christmas dinner for every student who finds it impossible to go home on that holiday. In these days of easy transportation by automobile—another year may be a different story!—only seven students found it impossible either to go home or to visit friends.

Two of the students were American-born Japanese; one of them has been on the campus for five years and the other is in his second year. Two of the others, a boy and a girl, were from Texas; another girl was from Idaho. The other two were from localities not so far distant, but which they were unable to reach because of their work.

A. J. Murphy Jr., Counselor on Financial Aid to Students, and his wife officiated at the dinner, which was held at the Ruskin. Afterward the guests were taken to the Ice Follies. Because of Mr. Wurtz's thoughtfulness, an otherwise lonely evening became an occasion of good fellowship and good cheer.

INSECT LIFE THROUGH A MICROSCOPE

By Gustave A. Link Jr.
Associate Preparator, Carnegie Museum

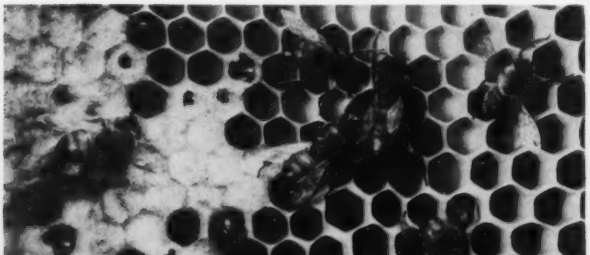
A survey of the insect world through a microscope will reveal endless phenomena and will greatly compensate the patient observer with many pleasant, as well as interesting, surprises. This same microscopic effect is obtained in the three new habitat groups of insects, greatly enlarged, that were recently placed on exhibition in the Hall of Entomology.

The exhibits were primarily constructed to illustrate examples of the most highly specialized instincts found among insects. The amazing development of these various instincts is shown by the elaborate ways in which they construct the homes for the entire colony and in the effective manner of providing for the offspring. The variety of materials used for these specific purposes and the unusual methods employed are also evident in these displays.

Two quite different forms of insects are shown—namely, the family of termites, which are often erroneously called white ants; and the collective family of wasps and bees. To the latter family also belong the ants illustrated in a similar series of three habitat groups which were recently completed, and were described in the Carnegie Magazine for October 1939. In the whole insect world the ant, the bee, and the termite have reached the highest degrees of social organization.

The honey bee has been domesticated by mankind since ancient times. It is not a native of North America, never having occurred here until it was introduced in the seventeenth century by the early settlers. Its two main products, honey and wax, have proven to be sources of generous revenue to the beekeepers throughout the entire country, numbering somewhere around eight hundred thousand. In the United States bees yield about one hundred thousand tons of marketable honey annually, to say nothing about the large amount that is left remaining in the hives for their own food supply. Although these figures may seem astounding, the bees are even far more important to mankind, helping in their role as pollinating agents to maintain the agricultural system.

We can scarcely realize how much dependence we place on this insect to effect the pollination of the plants on our farms and on the trees in our orchards. Since honeybees perform the marriage ceremony of the plants, they are sometimes referred to as "the priests of the flowers." After mating, which occurs very high in the air, the drone or male drops to the earth in a dying condition and the queen thus immediately becomes a widow. After her return to the hive she devotes her entire life, which may be three to four years, to the management of the hive and to her duty of producing eggs. At the height of her career she may lay as many as 1,500 eggs a day, maintaining this rate for quite some time. The worker bee has a straight, barbed, unretractable sting and dies after having used it but once. The queen bee has a curved smooth sting and uses it only to kill other rival queens, since more than one queen is never permitted in a hive. The drone does not possess a sting, and can be handled without fear, like a harmless fly. The drone is character-



BEES AT WORK ON A SECTION OF A HONEYCOMB

ized by two especially large composite eyes that touch each other at the top of the head. Each of these organs of vision contains about fourteen thousand facets or individual eyes.

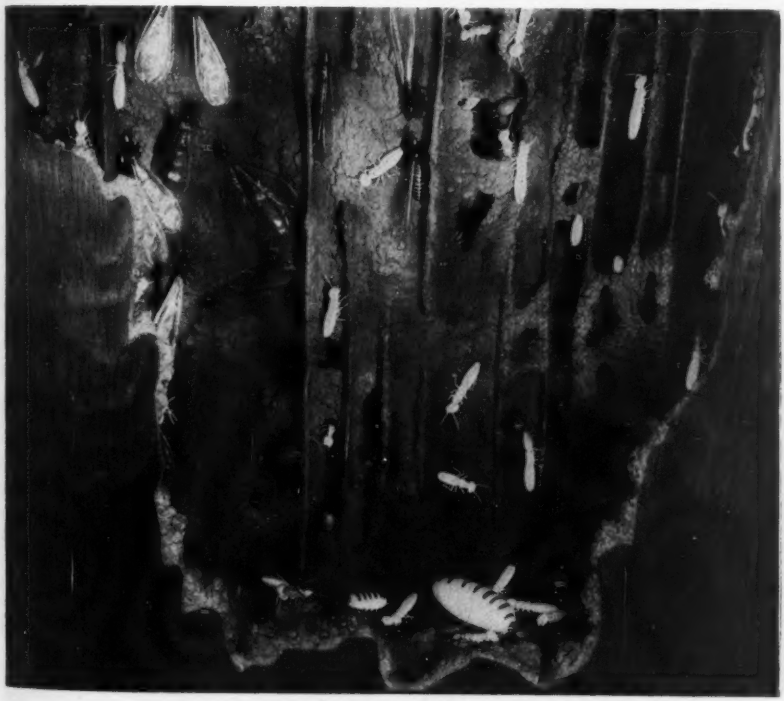
The honeycomb, which constitutes the home of these busy creatures, is regarded as the most perfect example of engineering art found among living insects. The hexagonal waxen cells that form its foundation are in many respects extraordinary structures. Mechanically they possess all the necessary qualities for the maximum compactness, the minimum quantity of material, and the utmost strength.

The bee group shown here depicts a section of honeycomb about two and one-half by three inches in size, containing over two hundred cells enlarged to twelve times natural size. Materials and substances appear very differently when observed through a lens, and to imitate an object as it appears after it has been enlarged often requires a long series of experiments and much study in order to arrive at the proper technique. The reproduced hexagonal cells are about two and one-half inches across and about six inches deep and were first shaped or molded from heavy cardboard, folded at the proper places to give six even planes. They were then assembled and glued in their natural position, leaving larger open spaces here and there to represent the heavier ribbing or bracing in the comb which the bee intentionally builds for strengthening. After the brood cells, the honey cells, and the drone cells—these last being much larger than the others—were placed in their respective positions, the inside end of each cell was capped. The caps are of different sizes and were shaped from compressed paper over hexagonal forms. Papier maché was then modelled onto this more or less rough base, subsequently giving the proper curves and thicknesses to the side walls, front edges, and backs of the cells. When enlarged, the small particles of wax, of which the honeycomb is formed, appear like small irregular translucent barnacles. This unusual texture was obtained by coating the entire model comb with rather coarsely ground glass, and finally applying transparent colors with an airbrush. The imitation of honey in the numerous cells was made of concave-convex pieces of glass, which were blown in a properly shaped mold made especially for this purpose. A pale transparent amber color, to represent clear clover honey, was finally applied. From the rear a reflected light through these amber-colored glasses gives the luscious glow of real honey.

The bees on the comb—including a queen, a drone, and numerous workers—are about seven inches in length and were fashioned in the following manner. An anatomically correct clay model of the bee was made after carefully studying each individual part

through a microscope, and a piece mold of plaster of paris was made of the model. After treating the mold to make it nonadhesive, it was filled with melted wax colored to about the natural tint of the living insect. In a short time, when the wax had cooled and hardened, the mold was removed, piece by piece, revealing a perfectly shaped body, thorax, and head of an enlarged bee. The details, such as the legs, wings, antennae, mouthparts, and hair —which are all made of glass—were then attached to their respective positions on the wax body. A little color was applied for the fine details and the bees were completed. They were then assembled in natural attitudes and positions on the comb. The eggs and larvae in the exhibit were modelled and cast in a similar manner.

The subterranean termite is the species which is becoming very common, as well as very destructive, in this immediate locality. Much damage is done each year by them to the woodwork of many homes and buildings, and because they live in total darkness the destruction is generally unobserved until it has become very serious. Their principal food is cellulose obtained from either dead or living vegetation in almost any form, including books and cloth. They live entirely underground or within the wood itself, are blind and shun light, and therefore are rarely seen. Moisture is very essential to this species of termite, and it is necessary for the individuals to have access to the damp ground, unless the wood in which they are working is kept wet from another source, such as a leaking water pipe.



A SUBTERRANEAN TERMITE COLONY

THE DIGGER WASP AND HER UNDERGROUND NURSERY

In excavating the wood as a shelter for their colony the workers completely honeycomb it, eating out the softer parts and permitting the harder parts of the growth rings or ribs to stand to give support, as well as to supply runways. When extending their workings and galleries, the termites carry moisture with them by means of wet earth which is plastered all over the interior of the wood. When contact with their moisture supply in the ground is cut off all the insects left in the damaged wood will soon die regardless of their numbers. If they become desperately hungry and there is no available wood in the ground nearby, they build covered earth-like shelter tubes over stone or concrete foundations to higher wood, sometimes even to the second floor. These tubes exclude the light and serve as passageways to and from the ground.

The specialization of the activities of the termite is attained by differentiation into forms or castes, each with distinctive structural characteristics. Five forms or castes are found in the colony—namely, workers, soldiers, and sexual individuals, and a king and a queen. The workers, the soft-bodied grayish-white form, which are the most numerous, are the sole destroyers of the wood. They bite it off, chew it up, predigest it, and then feed it to the entire colony. They also manage and care for the home. The soldiers are the extremely large-headed form with the prominent pincer jaws. Their only duty is to guard the colony against intruders. The sexual individuals, which may be of either sex, are the brown-winged forms which swarm or leave to found new colonies elsewhere and to become future kings and queens. This is the only form that is ever found outside the colony, usually in the spring, and they are often mistaken for winged ants. The sole duties of the king and the queen are concerned with perpetuating the colony. She becomes enormously distended and is capable of producing hundreds of eggs each day.

The arrangement in the exhibit, which is enlarged to eighteen times natural size, represents an opened piece of moist wood, revealing the central part of a colony of local termites. There are over seventy-five individual insect models in the group, all of which are constructed of wax and glass. Two

brown-colored rove beetles, a number of which are occasionally found living in undisturbed association with termite colonies, are also shown. It is not as yet known what function, if any, this entirely foreign beetle has in the colony. The main gallery of the group is designed of wire screening covered with papier maché to imitate the workings of the insects, and different depths are shown revealing how very destructive their constant chewing becomes. The ribbing or growth rings are also visible and the final rough texture demonstrates how particles of wet dirt and stone are covered over the workings to retain the necessary humidity. Some moisture has been introduced into the setting as a whole by the application of liquid celluloid and varnish.

The digger wasp is not only one of the most graceful and attractive of all the wasps but has extremely interesting habits as well. Its life involves an elaborate procedure of raising its progeny. The female goes out all alone and selects a suitable spot, usually near some low vegetation, for her underground nursery. She then digs a burrow about an inch deep, at the end of which she also excavates a gallery or room. During this digging operation, particles of soil, instead of being heaped up around the burrow, are taken away and dropped elsewhere. The excavation completed, the wasp now goes out among the grasses and weeds in search of her prey, which consists mainly of the green caterpillars of certain moths. After knocking the caterpillar to the ground she attacks it at once and stings it repeatedly until it is rendered entirely paralyzed. At times the caterpillar will struggle and roll and unroll itself with the most violent contortions of the body to repulse the attack, but always in vain. After having stung the caterpillar several times, paralyzing it completely but not killing it, she proceeds to drag the limp and helpless creature to her burrow, sometimes quite a distance away, and stores it in the excavated gallery. That same day, or perhaps a day or so later, she carries on again with the same procedure, securing a second caterpillar, which she also places in her burrow. A solitary egg is then deposited on the body of one of the caterpillars, which completes her underground nursery duties. She then returns to the surface and proceeds to close the entrance to the burrow with loose earth. While doing this the wasp holds in its jaws or mandibles a suitable small stone which it uses as a hammer to pound the soil into the filled-in opening, thus concealing the entrance from other preying insects. Subsequently the egg hatches and the larva feeds upon the caterpillars and finally emerges as a full-grown wasp. Since the stone is used as a tamper, this wasp may be considered as one of the very few insects that really uses a tool.

The exhibit, which is enlarged to eight times natural size, presents four wasps and several caterpillars in a natural setting representing different phases of their life history. The wasps were prepared in the same manner as the bees, and the caterpillars were modelled from glass. The groundwork is of a papier maché preparation, and at one side shows a cross section of the underground gallery or nursery containing the two caterpillars and the solitary egg. A curved painted background adds much depth to the group.

While the exhibits were designed and prepared by the writer of this article, due credit should be given also to Frank Long, who worked so untiringly upon the blown-glass insect models. Although the task required great patience, the results are well worth the effort. John E. Link should also be mentioned for his assistance in the work of preparation, and Ottmar F. von Fuehrer for his realistic painted background for the wasp group.

Dr. Andrey Avinoff, Director of the Carnegie Museum, states that, so far as is known, these enlarged insect exhibits—together with the three others recently completed—are the only displays of their kind in the country.

DRAWING TO MUSIC

The Saturday Morning Drawing Class Demonstrates in Colored Crayon What Can Be Heard

In what was the most colorful and probably the most intellectual animated cartoon of recent years, Walt Disney's "Fantasia," the artists listened to various superb musical compositions played under Leopold Stokowski's inimitable baton, and then painted on the screen the art pictures that they heard embodied in the compositions. In recent lessons, the same idea has been developed at the Carnegie Institute by Elmer Stephan, before the Tam O'Shanters, the Saturday morning drawing class of which he is the instructor.

Assembled in the Carnegie Music Hall for the first time in their history, this class of six hundred potential artists—the largest art class in the world—listened to several compositions played by Mr. Stephan on the piano and then put down on their sketching pads the ideas that flowed through their fingers upon hearing the music. In other words, as Mr. Stephan played, the children exercised their imaginations in many directions, drawing forms that sprang into life from hearing the inspiring notes on the piano.

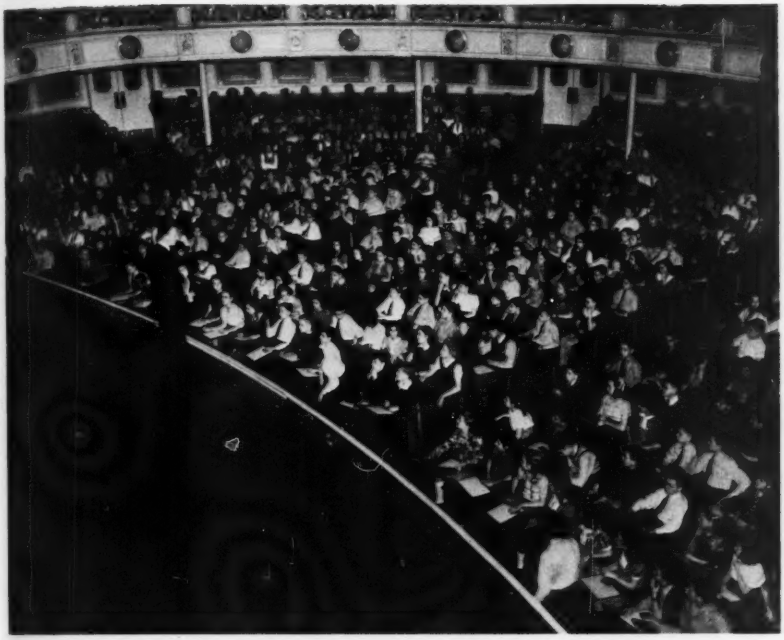
Mr. Stephan, in presenting his lesson, gave an opening talk on music, and played parts of the "Romance" of Sibelius to show the children how to listen. He explained, in a simplified way, the tracing of the melody and the final complete harmony, illustrating each step with improvisations.

When the class was ready to draw he played four pieces for them, from which they were to carry their impressions onto the paper with their drawing pencils. The first piece was a Brahms waltz; the second, a Chopin prelude; the third, Debussy's "Clair de Lune"; and the fourth, one of Mr. Stephan's own improvisations.

The result of this lesson pleased Mr. Stephan so much that he has followed it with other music-art lessons. In one, the class sang while he did an abstraction for them, after which they drew their ideas to a phonograph record. In the next lesson, to carry on the same idea, the class heard recordings of Saint-Saëns "Carnival of the Animals," without knowing what it was, and did even more expressive drawings than before.

The Tam O'Shanters is only one of three drawing classes that are held on Saturday under the auspices of the Department of Fine Arts of the Carnegie Institute. Admittance to it is gained through the recommendation of the art teacher in the child's school, so the boy or girl belonging to the Tam O'Shanters must have outstanding ability and interest in art. This is also true for admittance to the other creative class for

MR. STEPHAN PROVIDES THE STIMULUS FOR DRAWING TO MUSIC



THE PRESENTATION OF THE LESSON TO THE TAM O'SHANTERS

children held at the Carnegie Institute each Saturday morning. Under the direction of Katherine R. McFarland, two hundred boys and girls, older than the Tam O'Shanters and selected for their art aptitude from the eighth and ninth grades of the public, private, and parochial schools of Pittsburgh, meet in the gallery of the Hall of Architecture to work at easels with opaque water-color paint. More aware of their limitations and more anxious to understand and correct technical defects, this class, known as the Palettes, includes many prospects for an art school. In Miss McFarland's own words, in interpreting the work of a new class: "These boys and girls will learn to understand and appreciate and go on from Institute groundwork to the wide world of artistic endeavor."

On Saturday afternoon, under the guidance of Joseph Fitzpatrick, the adult painting class is held. No attempt is made in this class, however, to train professional artists, and the work is consequently aimed at a recreational level. Working at easels in tempera, these men and women who have made art a worth-while hobby have enjoyed themselves so much that many of them come back each year for further instruction and relaxation. Some members of the group are now active members of the Pittsburgh Associated Artists, exhibiting in the annual showing of our local artists in the Carnegie Institute galleries.

D. N.

THE REFLECTION OF MUSIC

All music is what awakes from you when you are reminded by the instruments,
It is not the violins and the cornets, it is not the oboe nor the beating drums, not the score of the baritone singer singing his sweet romanza, nor that of the men's chorus, nor that of the women's chorus,
It is nearer and farther than they.

—Walt Whitman

THE GARDEN OF GOLD

In uttering his reflections on the coming of the New Year, the Gardener said to himself: "We must raise $1,000,000 this year." Then, in a sort of perspective soliloquy, he reviewed the financial situation of the Carnegie Institute of Technology. "In 1921," said the Gardener, "our friends of the Carnegie Corporation of New York who have the custody of Andrew Carnegie's fortune voted to give—and did give—Carnegie Tech $8,000,000 at that time without any conditions; and in addition to that they agreed to pay $8,000,000 to Carnegie Tech in twenty-five years, or in 1946, provided that we at Pittsburgh would raise from our friends one half the amount of that sum, or $4,000,000; or they would give two dollars for every one that we raised; and one third of our $4,000,000 could be in buildings on the campus."

"In these twenty years now passed," he continued, "our friends have given us for this 1946 Endowment Fund $1,619,121.32. Certainly that is a fine beginning."

He took out his pencil and set down some figures.

"That," he said, "leaves us $2,380,878.68 yet to be raised, and only five years in which to do it. The time is growing short. Yes, indeed; we must gather in one million dollars this year, and one million in 1943. Then we can sit down in peace, and that small remainder of $380,878.68 will drop to the ground in 1944 like the leaves that fill the brooks in Vallombrosa."

With this prospect of successful financiering before him, the Gardener fell to work with a will, confident that no day would go by without its gift of money, and certain in his mind that he would get his million a year, being upheld by the faith that has already transformed an ordinary abiding place into this flourishing Garden of Gold.

The Gardener was encouraged in his happy vision by something that was told to him about Atlanta. The progenitors of culture in the southern part of our country felt the need of a general tuning up of the educational processes throughout the South, and they all began to participate in a plan to raise $5,000,000 for that purpose. When they had made considerable progress in this undertaking the Rockefeller Foundation stepped forward with the magnificent offer to match the whole sum collected—that is, that if Atlanta raised $5,000,000, or any less amount, the Rockefeller people would double it with another equal sum. Up to now Atlanta has passed the first four million and is well on the way toward the fifth million, with more than half of it in hand. They have until June 1942 to finish the task.

If they can do that in Atlanta, surely we can do it here in Pittsburgh, where the reward will be two for one, or eight millions for four millions; so the Gardener is well within the broad boundaries of Pittsburgh philanthropy when he counts so confidently upon receiving a million dollars a year for each of the next two years. Every reader of the CARNEGIE MAGAZINE should feel free—and is urged—to participate in this enterprise, the gifts to run at will from one dollar to one million dollars, beginning with this month of January. Let the first mail bring in the first of these new givers.

And now we have the pleasant duty of recording some recent gifts toward this life-giving story:

The first visitor was Gustave H. Kann, who has undertaken to establish a student loan fund in memory of his wife's mother, which is known as the Julie L. Solomon Memorial Loan Fund. The September 1941 Magazine recorded the gift of the first $200 from Mr. Kann;

and now he presents the Gardener with $800, completing his promise of $1,000 for this noble purpose. The memorial will have a total worth of $3,000 in the 1946 Endowment Fund.

Then came a familiar face bearing a name that the Gardener was not to make known, and from his hand came a gift—not the first one from him, either—amounting to $500, which under the Garden of Gold bookkeeping takes on a value of $1,500 for the 1946 Endowment Fund.

After that came George T. Ladd, really a frequent visitor to the Garden of Gold, bringing a gift of $2,500—at once worth $7,500—correcting, in this case, the maxim—not that he gives twice, but thrice—who gives quickly.

Then an unknown man walked into the Garden of Gold and handed the happily receptive Gardener $100—worth $300.

And another unknown man followed him with $100—worth $300—and vanished.

Next came Walter J. Blenko, a graduate of Tech, well known for many good works, and for previous gifts to the alumni contribution to the 1946 Fund, who presented the Gardener with a check for $312, magically taking on a worth of $936 for this Garden of Gold Fund.

The Carnegie Institute is not forgotten in the munificent giving of our friends. George H. Clapp, noting a good work to be done in the Carnegie Museum, presented $1,000 for that purpose.

And Ernest T. Weir, a member of the Patrons Art Fund, sent his annual remembrance of $1,000 on his total subscription of $10,000.

Then, reverting to the Carnegie Tech 1946 Endowment Fund, these members of the alumni came into the Garden of Gold in a never failing enthusiasm to help in reaching the goal:

Elizabeth E. Bitzer, Adah Borgerding Brownlee, Robert Gruen, L. P. Johns, Anthony Kerin, Margaret Nock McConnell, Robert A. McConnell, Fred K. Minor, Sara Elizabeth Mitchell, and Margaret Lappe Wheeler have contributed sums amounting to $47; Leffman H. Lee, P. A. McDermott, and Maude Sanford Saby have contributed to the amount of $22; and the sum of $220.50 came from gifts by William C. Baumgart, Carroll B. Collins, Frank R. Edgarton, Mrs. W. W. Ford, Richard M. Galbreath, Guy Halferty, Agnes M. Holst, Mrs. E. A. Jenkins, Mrs. Gordon King, H. W. Lynn, Harry R. McCullough Jr., J. B. Myers, John J. Pegnato, Calvin H. Schenk, Benjamin L. Schwartz, Howard W. Shaffer, Charles Steckle, Genevieve B. Straessley, Robert G. Weber, Sidney Winikoff, and Elizabeth Ramsay Kyle.

Contributions to the 1946 Endowment Fund of $181 represent the following alumni: Marion F. Burns, John A. Carothers, Detroit Women's Clan, Gordon V. Durr, Esther Topp Edmonds, Priscilla A. Evans, Marjory Glassburn Francis, Arthur C. Freeland, Charles N. Geisler, Marion Grable, James M. Guthrie, Mr. and Mrs. E. H. Klemmer, William C. Lyon, S. Donald McGervey, Jean Marie McGirr, James G. Meenan, David G. Morgan, Ralph Scherger, W. H. Stafford, Albert N. Stratmoen, and William S. Walker.

Adding the amounts acknowledged this month to the total sums recorded in the CARNEGIE MAGAZINE since April 1927, which are in addition to those mentioned by the Gardener above, brings the total of cash gifts contributed for the work of the Carnegie institutions to the following amounts: for the Carnegie Institute, $1,320,422.95; for the Carnegie Library of Pittsburgh, $40,629.12; and for the Carnegie Institute of Technology, $230,745.68 for operation and equipment, and $1,623,803.82 for its 1946 Endowment Fund, which will multiply under the two-for-one arrangement with the Carnegie Corporation of New York; making a grand total of $3,215,601.57 for the three institutions. There is still the sum of $2,376,196.18 to be raised before the 1946 goal is reached.

DISCUS THROWERS FROM GREECE

Of all the Greek institutions none exerted so strong an influence on the development of Greek character as the gymnasium and open-air palaestra, or wrestling ground, which admirably combined the advantages of physical training and athletic sports and which were characterized by their rigorous physical, mental, and moral discipline. Every Greek boy's ambition was to attain the objectives that were to be reached in this ancient training ground, which were, according to Lucian, "manly perfection, physical beauty, marvelous development, amazing skill, invincible strength and courage, wholesome rivalry, unconquerable spirit, and tireless endeavor to surpass." The goal was "excellence," the result of perfect training of body and soul.

The Greek spirit called for constant self-control and for wholesome rivalry as a preparation for the problems that beset every man in life. The Greeks believed in formal discipline and in transfer of training, consequently what they learned in the gymnasium was applied to every department of social and civic intercourse. The conduct of their lives was practical proof of the soundness of their beliefs, and, to this end, athletics played a powerful role.

The athletic sports of those ancient times were much like those attempted by modern boys in field meets today, and included racing, the broad jump, and discus throwing. The discus throw has been revived in modern days with the renewal of the Olympic games in 1896. But our discus throw, just as our other sports, is not performed in exactly the same way that it was in ancient Greek times. In the first place, the modern discus is thicker, smaller in diameter, and lighter in weight than the ancient one. It is made of wood and brass, while the finest ancient discus extant is one made of bronze, about a foot in diameter and less than half an inch thick, and dedicated to Zeus at Olympia.

THE DISCOBOLUS AFTER MYRON
Greek 450-400 B.C.
Replica of the Original in the British Museum

It is not surprising that such a graceful and superb play of muscles should attract the sculptor of ancient times. The two examples reproduced here are in the Hall of Sculpture at the Carnegie Institute, interpreting for the present day the ancient attitudes of the sport.

The ancient discus thrower took his place within a prescribed spot, with his discus in his left hand, as the Standing Discobolus shows. After warming up, the youth swung his discus up to the level of his head and

there passed it over into his right hand. Then, as in the Discobolus after Myron, he bored his toes into the sand, and entered upon the backward swing. In that indivisible fraction of a second when the discus had just ceased to go backward and had not yet begun to go forward, he threw his full weight forward upon his right foot. With a tremendous swing, the discus was in that instant swung downward and forward and sent flying to its goal, with the weight of the athlete's whole body following it.

STANDING DISCOBOLUS
Greek 450-400 B.C.
Replica of the Original in the Vatican

The beautiful standing athlete, holding his ready discus in one hand and with the other feeling his gathering strength in the fingers that shall hurl it, was found in 1792 in the ruins of an ancient villa on the Via Appia and bought by Pope Pius VI for the Vatican, where the original now stands. The right hand of the figure is ready to receive the discus in a moment and to hurl it with a powerful throw; the right foot is advanced, while the body is still firmly resting on the left foot. The head also exhibits that expression of intense self-collectedness that must precede such a moment of concentration and readiness.

The beauty and grace of the statue lie in the suspense of the attitude, in the lifelike action in seeming repose, and in the manner in which the slender, youthful, agile figure balances himself on the left leg. He is preparing to swing himself into a posture like that of Myron's Discobolus—and the whole figure suggests the muscular laxity that must precede the tension of the moment expressed by Myron. As is usual with works of the fifth century B.C., the face expresses none of the excitement of the action. The athlete is taking up the position adapted for the throw, and is accurately calculating the direction in which, and the distance to which, the discus must be cast.

The Discobolus after Myron exemplifies the athlete who has gathered together all his strength to hurl forward his disk; to gain the last impetus he has sent it back in his right hand with all his might. The force with which this throwing back was accomplished has stretched the right arm to the utmost and bent the upper part of the body accordingly. Motion is expressed perfectly in the torso and in the arms; but the head, for all its fine Attic features, does not attract either through intellectuality, activity, or enthusiasm. The face, contrary to what we should expect at such an intense moment, is impressive and broadly generalized. The pose, however, in its freedom and its suitability for bronze, shows the artist's complete understanding of his material.

This Discobolus is a replica of a marble statue that is now in the British Museum. It was discovered in Hadrian's villa in Tivoli in 1791, a marble copy of the original bronze executed by Myron of Athens, whose works antedate those of the great Phidias.

D. N.

"PLAYING POSSUM"

A New Habitat Group in the Children's Museum

By Reinhold L. Fricke
Preparator in the Section of Public Education, Carnegie Museum

The family of opossums raiding a cardinal's nest, which is portrayed in the new habitat group now on display in the Children's Museum, is contrasted in its own dusky gray and white by the brilliant plumage of the father cardinal, who is perched nearby, in his glowing red vest, uttering distress signals while the raid goes on.

Mother opossum is climbing up a wild grape vine, trying to reach the nest hidden in the feathery branches of a white pine tree. One of the youngsters, more forward than the rest, has left his mother's back and has succeeded not only in reaching the nest, but also in taking an egg. He is feasting on it in a hasty and careless fashion, and the contents of the broken egg are dripping from his handlike paws. Three of the young opossums are following the first, one of them trying to reach the nest by climbing over his brother's head. Four of the babies are still on their mother's back, hanging on by feet and tail; while the mother bird is darting toward them in a vain attempt to drive off the intruders. The smallest of the family has just poked his head out of his mother's fur-lined pouch and seems to be confused by all the excitement.

This opossum family was the gift of Christ J. Dietrich, who found the animals in his garden, when the babies were still very young.

In preparing habitat groups such as these, the Carnegie Museum is endeavoring to portray glimpses of the lives of our local animals for the children of Pittsburgh. The opossum group supplements a series of small dioramas in the Children's Museum that includes displays of the common black duck, the ruffed grouse, the great-horned owl, the woodchuck, the skunk, the cottontail rabbit, and the muskrat.

The opossum belongs to the ancient order of mammals known as the marsupials or pouched animals, now limited to Australia and the Americas. In Australia many species of mammals belong to this order, the better known of these being the kangaroo. In the Americas this group is represented only by one family of several species of opossums. The smallest of these, the murine or mouse opossum, is so tiny that he is sometimes brought to Pittsburgh from the tropics in the stalks of bananas. A family of these, so acquired, is on display in the Hall of Mammals on the second floor of the Museum. The largest species of this interesting family—the Virginia opossum—is the only form of this mammal found in North America. It ranges from Florida to New York in the east, and westward along the Gulf of Mexico to Texas. It is rather common within the limits of Pittsburgh and is often found, killed by automobiles, on the city streets.

This primitive, mainly nocturnal mammal is omnivorous, feeding with great gusto on a variety of foods. It searches over the ground seeking small mammals, insects, frogs, snakes, crayfish, carrion, refuse, and vegetable matter; and its monkeylike feet and grasping naked tail enable it also to climb trees in quest of fruits, birds, their eggs

and young. The fifty sharply pointed teeth in its capacious mouth enable it to devour any food spied out by its beady jet-black eyes or sniffed out by its long piglike snout. Its erect, naked, rubbery black and gray ears are keen and alert for the noises of the night. If surprised in its wanderings, this animal has the interesting habit of feigning death so realistically that it gave the origin to the familiar term "playing possum."

The outstanding characteristic of the marsupials is that they are the link between the egg-laying mammals and the true mammals, which give birth to well-developed young. In the case of our native opossum, the birth of the embryonic young takes place less than two weeks after mating, with the litter numbering from five to fourteen. At this stage, the babies are so tiny that all of them will fit into the bowl of a tablespoon. At birth they enter the abdominal pouch of the mother, where they continue their development and are nursed for several weeks. When they attain the size of ordinary mice they become crowded in their snug place of refuge and crawl out. No matter how rough the going is they will stay with their mother on foraging trips, clinging to her with their small handlike feet and prehensile tails. The young opossums remain with the parent until their combined weight equals or exceeds that of their mother. And it is surprising how well she can walk and even climb with such a heavy load. Motion pictures taken of our opossum family attest to the ease with which the mother maneuvered her family about before they became Museum specimens.

In preparing the exhibit, I had the assistance of the Carnegie Museum staff artist, Ottmar von Fuehrer, who painted the artistic background. After completion of the taxidermic processes, the whole group was assembled in a unit and opened to public view on the last day of 1941.

"THE TROPHY OF THE HUNT"

William M. Harnett Painting Acquired for the Permanent Collection of the Carnegie Institute

THE CARNEGIE INSTITUTE has acquired a still life, "The Trophy of the Hunt" by William M. Harnett, for the permanent collection. It was secured from the Downtown Gallery, which has done so much to revive interest in this artist who made such a unique contribution, through his great technical skill, to American nineteenth-century painting.

"The Trophy of the Hunt" is oil on canvas, which has recently been attached to a panel for its preservation. The painting is 22 inches in width by 42½ inches in height. It is signed in the extreme lower left corner, "W. H. Harnett, 1885," the date indicating that it belongs to the period of "The Old Violin." It has certain elements in common with that famous picture, which was done in 1886.

In the painting, a very realistic hare—the trophy of the hunt—hangs suspended by one of its hind feet from a nail on a cupboard door. The door has two large, decorative, wrought-iron strap hinges and a circular iron clasp. This old door was a favorite subject with Harnett, for it appears, with variations, particularly of the hinges, as the background in "The Old Violin," "The Old Cupboard Door," and "The Faithful Colt." Every nail and every slight nick or scratch on the rich dark green door is depicted with unbelievable fidelity, so that even if the surface of the painting were marred, it would be difficult even for the critic to distinguish be-

tween the real and the painted defects.

While the painting, in its meticulous realism, is related to the Dutch art of the seventeenth century, it has a personal element in its pattern, in its rich and subtle tones, and in the heightened effect of quality that has gone into its making. Harnett might very well have been referring to "The Trophy of the Hunt" when he said: "In painting from still life I do not closely imitate nature. Many points I leave out and many I add. Some models are only suggestions. The whole effect in still-life painting comes from its tone, and the nearer one attains perfection, the more realistic the effect will be."

William Michael Harnett was born in Clonakilty, County Cork, Ireland, in 1848. He was brought to America the next year by his parents, who settled in Philadelphia. At seventeen he became an engraver, working in copper, wood, and silver. In all probability his training in this field accounts, to a large extent, for his technical precision. While working, he spent his free time studying at the Pennsylvania Academy of the Fine Arts. Later, when he moved to New York, while following his trade as an engraver during the day, he studied art in evening classes at the National Academy of Design and at Cooper Union. In 1875 he gave up engraving and devoted his entire time to painting. He once said in an interview: "Poverty led to my taking up the line of painting that I have followed for the past fifteen years. I could not afford to hire models as the other students did and I was forced to paint my first picture from still-life models—a pipe and a German beer mug." He went to London in 1878 and then to Frankfort and later to Munich, which was his home for four years. In 1884 he was in Paris and exhibited in the Salon. The last ten years of his life were spent in New York, where he found a steady market for his limited production. He died in New York on October 29, 1892.

Harnett's paintings were very popular during his lifetime. They were sought by collectors and brought extremely high prices. His "Emblem of Peace" was originally purchased for ten thousand dollars. That his pictures should have sold for so much and then have been completely forgotten is difficult to understand. The interest in his paintings in his day was in their technical perfection and realism. He is now coming into his own again because of the quality of his work, his keen sensitivity to color and to the beauty of abstract form, and his anticipation of some of the elements in contemporary painting. J. O'C. Jr.

THE TROPHY OF THE HUNT
By William M. Harnett (1848-92)

GLASS PRESSED AT PITTSBURGH

By Lowell Innes
Assistant Headmaster, Shady Side Academy

The third case of Pittsburgh glass in the chronological survey of early district glassmaking is now on view in the Gallery of Useful and Decorative Arts of the Carnegie Museum. Less brilliant and satisfactory than the two earlier ones from an artistic standpoint, the exhibit is thoroughly characteristic of the eighties. The influence of the seventies is much less evident than the directions of design and color pointing definitely toward the nineties. In fact, an intolerant observer might wonder how many of the pieces were given away as premiums by a tea company. Yet it would be difficult to assemble a typical group of the period that did not present equal artistic weaknesses.

Pittsburgh, one of the first districts to use the pressing machine—Bakewell took out a patent in 1825—has had a long and important part in the development of the glass industry. It was the first to supersede wood with coal, then coal with gas, as heating fuels for the furnaces. Though the perfection of the lime-soda formula in 1864-65 came from William Leighton Jr., at Wheeling, West Virginia, Pittsburgh saw its unlimited possibilities and used it immediately.

Mechanical pressing, improvement of fuel, and the new chemical formula speedily insured cheap and profuse tableware. The far-reaching implications of the formula were not at first realized. The substitution of bicarbonate of soda in place of soda ash previously used in the lime glass seemed merely an obvious economy in the purchase of materials. The new glass in chilling, however, became rigid much more quickly than flint or lead glass. Consequently a workman finished the ware very promptly, and production was stepped up decisively. The bicarbonate product had the added advantage, too, of lightness of weight. With all the improvements in fuel, equipment, and methods it has been established that the cost of production after 1865 was about one fourth of what it had been earlier in the century.

William Leighton Jr., of Hobbs, Brockunier and Co., Wheeling, West Virginia, writing in the Wheeling Sunday Leader for March 28, 1880, has this to say of the product: "No kind of ware, even if composed of most common materials, can now compete in cheapness with lime glass for drinking vessels and tableware; while for beauty of material, finish, shape, and ornamentation glassware is more than equal to, and for cleanliness far beyond any other."

At the turn of 1880 Allegheny County, with fifty-one glass houses, had approximately twenty-five per cent of all establishments, thirty-two per cent of all capital, twenty-eight per cent of all products for the United States glass industry. These figures did not include plate glass, which was then not made in this country. And they exclude glass companies from Fayette and Beaver counties which found it strategic to have general offices in Pittsburgh.

With such growth and with the gradual squeezing out of the single artisan, patterns became bolder, more varied, and more naturalistic. Adams & Company on South Tenth and Washington Streets is well represented in the

present exhibition case by Plume, Wildflower, and Moon and Star patterns. Thousand Eye was made by both Adams and Company and Richards and Hartley of Tarentum, most of the pieces on view, however, having been produced by Adams. The scalloped edge on the base distinguishes the Richards and Hartley product, while the knobs mark the Adams design. George Duncan and Sons shows the frosted and crackled effect in Tree of Life and Shell and Tassel. Bakewell, Pears & Co.—if they were the manufacturers—have the most naturalistic of all the designs: Deer and Pine Tree. An illuminating commentary on the designers is the obvious combining of the early geometric with the late naturalistic in both Wildflower and Deer and Pine patterns. The heaviness of Plume and Thousand Eye and the lush decadence of Moon and Star bespeak waning Victorianism. Nearly all the patterns in the case bear legends with dates. These dates, of course, are merely suggestive, not exact.

Milk glass and marble glass, on the second shelf, indicate a contemporary straining for novelty. Marble, slag, mosaic, onyx or calico—as it has been variously called—is definitely a product of the chemist, not an end-of-the-day mixture, as collectors like to delude themselves into thinking. Milk or opaque white glass, a much older form, was exceedingly popular on the continent and in England toward the end of the eighteenth century. In our country it reached its height in the eighteen-eighties. One Pittsburgh firm seems to have produced a good many of the pieces of both marble and opaque white—Challinor and Taylor, later of Tarentum. Circumstantial evidence of interest is the opaque white vase made from the identical mold of the purple marble one beside it. The Westmoreland Glass Company of Grapeville is represented by a blue opaque mustard jar with the original label intact on the bottom. These jars filled with mustard retailed for ten cents. Westmoreland also was one of the largest manufacturers of the popular hen dishes.

The Atterbury ducks deserve a paragraph, not because, like so many other Pittsburgh products, they were attributed to Sandwich, but because the duck was designed and patented by a Pittsburgh manufacturer, Thomas Bakewell Atterbury, president of the Atterbury Glass Company at Carson and Tenth Streets, South Side. He applied for the patent on February 3, 1887, and was granted rights on March 15 of the same year. It was called Design for a Dish, Patent No. 17,192, and represents one of the clear-cut instances when Pittsburgh can lay claim to a very popular antique piece.

Whatever the limitations of design and color imposed on American glassware of the eighties by either mechanical production or bad taste of the era, the third case brings to a close a very worthwhile program: three comprehensive pictures—the youth of Pittsburgh glassmaking, its growing manhood, and its maturity. As far as I know, this is the first time such a project has been completed with a unity of purpose. Both Carnegie Museum, which has encouraged and housed the exhibits, and the Pittsburgh Early American Glass Club, which supplied and arranged them, are to be congratulated.

PITTSBURGH ARTISTS

The thirty-second annual exhibition of the Associated Artists of Pittsburgh will be held in the galleries of the Carnegie Institute from February 12 to March 12, 1942. This popular showing of the work of our local painters, sculptors, and craftsmen, will be judged by a jury of selection and awards that will consist of five artists: three to select pictures, one for sculpture, and one for crafts work. Several prizes will be awarded in each class.

By a special arrangement, the Carnegie Institute galleries will be open until 10 P.M. during this exhibition.

"THE PLAY'S THE THING"

Reviewing "Dangerous Corner" by J. B. Priestley

By Harold Geoghegan

Professor of the History of Art, Carnegie Institute of Technology

"Dangerous Corner," J. B. Priestley's earliest original play, had its first performance, as far as I remember, about eight or nine years ago. At the time of its writing, Mr. Priestley was already a well-known novelist with such fine work as the delightfully Dickensian "Good Companions" and "Angel Pavement" to his credit. Since that time a large part of his literary output has been in dramatic form. This first play definitely shows a transition from the technique of the novelist to the technique of the dramatist. Indeed, it might almost be called a novel in dialogue. There is no action at all; nothing is actually done on the stage; everything that matters has occured before the curtain rises, and we learn of it through the narrations of the various characters. But what an exciting story it is, and how well told!

When "Dangerous Corner" was first performed in New York, several of the critics complained of its being static, and accused the author of "dawdling." Personally, I found it as exciting a play as I had seen in years. The unraveling of the mystery of Martin's death had all the qualities of a good and adult detective story without a Lord Peter Wimsey or a Hercule Poirot or a Nero Wolfe or any other of those rather irritating "sleuths" to spoil our pleasure.

At the opening of the play, Mr. Priestley shows us a small intimate group of people—Robert Chatfield, Gordon Whitehouse, Charles Stanton, partners in a publishing house; the wives of the first two, Freda and Betty; and a confidential secretary, Olwen Peel. They are all apparently reasonably happy, normal human beings, drinking their after-dinner coffee and chatting lightly with Miss Mockridge, a visiting novelist, about nothing in particular. A sudden pistol shot—one of the men using a flowerpot as a target—sets nerves on edge. The novelist is reminded of a former member of the firm, Robert's charming debonair brother Martin, who had committed suicide some time before under mysterious circumstances. Miss Mockridge is curious and shows it. There has been a discussion, apropos of a novel entitled "Sleeping Dogs" that Olwen is writing, as to whether it is better to learn the exact truth or to refrain from arousing the metaphorical sleeping dog for fear of possible unpleasant consequences. Chatfield, alone of the company, holds that knowing the truth can never do any harm. The others are for letting sleeping dogs lie. Freda, as hostess, offers Olwen a cigarette from a little cigarette box that plays a tune when opened. The latter remarks that she has seen the box at Martin's house. That, Freda tells her, is impossible, as Martin only received the box on the day of his death. How does Freda know that? Has Olwen really seen the box before? No one except Gordon is supposed to have seen Martin on that day. Robert, who is puzzled, begins to ask questions.

The rest of the play is question and answer. The sleeping dogs are aroused in earnest and disastrously. The pro-

STUDENT ACTORS IN A SCENE FROM "DANGEROUS CORNER"

verbial mud is stirred, and out of the slime come creeping all manner of obscene things. Every member of the cozy little group is revealed as an unhappy creature hiding a guilty secret. A bitter story of marital infidelity, theft, and murder little by little comes to light, and involves all the characters, including the inquisitor Robert. And the character who appears in the blackest colors is the charming Martin whom everybody loved. Indeed, the dead man is actually the most vividly drawn character in the play.

The manner in which the various pieces of the jigsaw puzzle gradually fall into place to form the complete and sinister picture is contrived by Mr. Priestley with extraordinary skill. It seems foolish to hold against an author his lack of movement when he can provide so much suspense and excitement by means of narrative. After all, the method employed is very much the method of Sophocles in "Oedipus Rex," and I have never heard that called an unexciting or static play!

By one of those tricks with time which are so dear to Mr. Priestley's heart, we are shown, at the end of the third act, that all the horrible revelations brought to light by Robert's inquisition are only something that might have happened, but which actually did not. When the whole dreadful truth has been told, the stage darkens for a moment, the shot which was heard in the first act is heard again. The men join the ladies, there is some desultory conversation. Miss Mockridge, the novelist, thanks her hosts for a pleasant evening and departs, and the cozy little dinner party is at an end. Sleeping dogs sleep on; the cats are still in their bag, the mud unstirred. Each goes off to bed with his guilty secret. The audience alone knows everything.

Douglas McLean's direction of "Dangerous Corner" at our theater was straightforward and quiet and admirably suited to the play. One has to admit that there is no action; yet the characters cannot be left each seated in his chair throughout the three acts. Stage convention demands that the director move his puppets about somehow. The movements and changes of position contrived by Mr. McLean were unobtrusive and generally sufficiently motivated. Rightly, his chief concern was to get sensitive and intelligent narration from his actors and to concentrate on that. One must be grateful to the director for having shifted the scene of "Dangerous Corner" from the English country house of the original to a country home in Connecticut; thereby relieving the actors from the necessity of assuming an "Eng-

lish accent," which is usually both unconvincing and painful.

Of the two casts, that which played the first half of the run seemed to me much the better. A young actor, whose parts had hitherto been either broadly comic or those of very young boys, played the decent, humorless Robert Chatfield remarkably well, and with a very just sense of character. There was a fine sense of repressed emotion in the performance of Freda, and the disagreeable part of Charles Stanton was more than competently handled. The Olwen Peel managed her exceeding long narrative of the death of the disreputable Martin with skill, and there was an entertaining sketch of the catty and inquisitive Miss Mockridge. The other cast, with the exception of a statuesque Freda, seemed a little colorless by comparison.

IF THE AIR RAIDS COME

The Pittsburgh community will be glad to learn that there will be no cause for panic at the Carnegie Institute and the Carnegie Library if the air raids should come. A thorough examination of the main building has recently been made with a view to establishing its defensive and protective qualities in case of attack from the air: first, as to the safety of the staff and visitors; and second, as to the protection of collections.

With the heads of all departments participating, here are the facts:

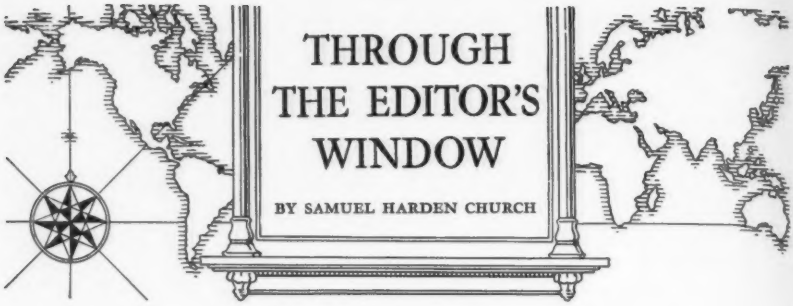
First, those parts of the building that are occupied by the Library and the Museum, and also the halls and corridors, were found to have floors of steel, marble, and cement, with many cross sections and intersections of steel, which would make it very difficult, if not impossible, for a bomb dropped from the sky to break through the third floor after going through the roof. This condition of the architecture seems to carry a reasonable assurance of safety as to persons and objects within those parts of the building.

Second, a different situation was found with regard to the galleries and halls assigned to the Fine Arts Department, for the reason that the original requirements for daylight for showing the paintings had resulted in roofs of glass that would be shatterable and destructive in the case of any successful attack from the sky.

Careful consideration was then given to the question as to whether the paintings should be removed from the building for the duration of the war. After discussion, this suggestion was discarded, first, because there was no available building to which they could be transferred; and furthermore, that certain parts of the basement, having now been prepared for the quick and safe storage of the paintings, could be used for that purpose upon the first alarm from the eastern seacoast.

With this very lively situation in view, an organization is now being built up, so that, besides being in constant communication with the police and fire departments of the City of Pittsburgh, the building will have its own safety squads, fire marshals, fire extinguishers, guides, and guardians, whose business it will be to take all necessary measures in such air raids, including the transfer of staff and visitors to the safe portions of the building, with a first idea of preventing any of them from rushing into the street.

The natural conclusion would seem to be that there is no safer place in Pittsburgh for protection, if the air-raid alarm should sound, than the Carnegie Institute. Therefore, it is taken for granted that the thousands of visitors who assemble in these halls each day will bring with them the comforting assurance of security, and the happiness of mind that goes with it.



THROUGH THE EDITOR'S WINDOW

BY SAMUEL HARDEN CHURCH

HOW WARS ARE MADE

There is a lot of loose thinking on what makes wars; especially are the authors in the economic field showing today an unusual fecundity as to the causes of the conflict that is now destroying the world.

The proposition advanced by them in books and magazines with so much certitude is this: That all wars have their beginning in the necessity for materials that are not produced in the country that provokes the outbreak.

Taking the present war as an example, there was never a more fallacious axiom put into words.

In 1932, at a time when the world was profoundly at peace and was still suffering the penalties of the last war, when its needful economies were under constant adjustment in the League of Nations, and when the system of universal interchange of commodities made it possible for every country to obtain everything that was produced upon any part of the earth, Japan attacked China, seized some of the most populous part of China's possessions, declared its purpose of subjugating the people of China to Japanese rule, and brought a blood-red war upon mankind. When a solemn protest was made by the League of Nations against this aggression, Japan haughtily withdrew from her membership in that body and continued her ferocious attack on a people that had maintained a peace-loving government for five thousand years.

There was not the slightest suggestion that this war was provoked by any raw materials possessed by China which were not indigenous to Japan; but if, in fact, there were any economic vacancies of nature in Japan, this universal system of distribution practically made Japan a joint owner of them with all the other countries in the world.

In 1935 Italy, under the guidance of Mussolini, who had forsaken his task of restoring law and order to his people and had now yielded to his ambition to rebuild the Roman Empire, made an invasion of Ethiopia and claimed its hegemony for Italy against the passionate determination of its population to remain free. There was not in the whole terrain of Ethiopia one pound of raw material that Italy required for her national prosperity. In fact, a certain Englishman had been heard to make the cynical remark: "There is nothing in Ethiopia that anyone wants. If there were, England would have had that country long ago." But here was the second war, made and pursued under the usual atrocities, for no purpose but that which instigated King Ahab to seize Naboth's vineyard—he wanted it to enlarge the space of his palace ground; and he killed the owner and took over the property.

The League of Nations protested this outrage, and Mussolini contemptuously resigned Italy's membership. When Anthony Eden courageously moved for the enforcement of sanctions against Italy, everybody said, "Hush! It might

inflame Europe into war!" and Mr. Eden was permitted to resign from the British cabinet under a policy of false appeasement.

In the meantime the conspiracy was enlarged and developed until Hitler had completed his preparations for the German conquest of the world, to include under his subjugation Japan, Italy, and the United States. Germany was not suffering from the lack of any needful raw material, on the contrary, she was stealthily supplying herself with an abundance of every commodity that was usable to Germany in war or peace. There was nothing in the whole Hitler scheme that was considered from any standpoint but that of conquest, pursued under conditions of rapine and murder that justified the President of the United States in styling Hitler an international highwayman.

It is worth-while to say that when men speak of the Versailles Treaty as working an unbearable hardship in Germany they have lost their reason and are letting the heart overrule the head. If Germany is under the sway of an international highwayman today, as President Roosevelt says she is, she was propelled into an all-conquering war by the same kind of ruthless Prussian highwaymen as in 1914-18; and when a peace was forced upon her at the end of that war, there was practically only one restrictive measure in the Treaty of Versailles, and that was the deep resolve taken for her disarmament. All else counted for nothing; and while disarmament prevailed Germany was never attacked and the supply of extraneous raw materials was open to her as freely as if she were in fact the mistress of the world.

The conclusion of the argument advanced by these current authors is that if any commodities exist in any part of the world which any nation lacks, then that nation must, in the logic of things, conquer all the world until it comes into possession of the last ounce of stuff that is vacant in its own possessions. That, of course, is the reductio ad absurdum, or Adolf Hitler enthroned and justified.

War is made by the wickedness of men, whose ambition carries them to an inevitable fall. The lack of goods has nothing to do with the case.

A GREAT ORCHESTRA IN PITTSBURGH

The Pittsburgh Symphony Orchestra has long since established its right to permanent life, and its concerts are now accepted by the people of Pittsburgh as the principal contributions to musical culture in this community.

This achievement could come only from supreme excellence in the direction of the orchestra. Its conductor, Fritz Reiner, stands beyond question among the greatest of the world's musical masters. His knowledge of the whole deposit of existing compositions is so comprehensive that one might almost say that if Hitler were to destroy all music Mr. Reiner could reproduce its essential parts from the extraordinary recordings within his own brain. This familiar knowledge of an intricate and beautiful art has developed an infinite taste which to him, as Shakespeare has it, makes music the food of love. And when Mr. Reiner faces his hundred players the audience feels the presence of the master of the feast.

But it remains to be said that an ideal orchestra must have not only a loyal community and an able conductor, but likewise a body of men to be builded into a human instrument competent of playing together as the combined notes are struck on a great organ by a single player. To gain this last effect of perfection has required many changes, but in every case these changes were made with absolute regard to the highest standard of individual ability; and now that victory has been achieved in this work of creation the orchestra should stand first in evoking that feeling of pride, approbation, and loyal support with which every citizen will be glad to greet its performances through the coming years.

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